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Seeding Native Grasses

By

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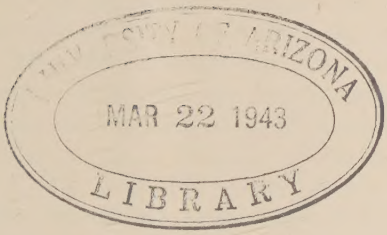

OKLAHOMA AGRICULTURAL EXPERIMENT STATION
Oklahoma A. and M. College, Stillwater

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Methods of Seeding Native Grasses

Two general methods of seeding native grasses have been used successfully in Oklahoma. The methods which are perhaps most common are:

1. Scattering mature native grass hay over the area to be seeded. Every farm has a meadow, waste land or a roadside where native grass mixtures each year make a luxuriant growth and produce a good seed crop. Some of these areas can be used quite profitably as an annual seed source for seeding small areas. This mature grass should be cut soon after frost, raked, and scattered uniformly over the land to be seeded. After the mature hay has been evenly distributed over the area, it is advisible to run over it with a corrugated roller, empty grain drill or disk to further help the seed become established in the soil. If a disk is used, one should be careful and not cover the seed too deeply. One good load of mature hay, if it is heavily seeded, will cover an acre of ground. This is a very easy and economical method, particularly for small acreages and when native grass seed is expensive and scarce on the general market.

2. Drilling good quality adapted native seed mixtures in a sorghum stubble mulch. This method, to be most successful, requires that a sorghum crop (sudan, cane, or grain sorghums) be grown the year preceding the native grass planting, and mowed 8 to 10 inches high, leaving it on the ground for a mulch. A more complete explanation of this method is found on the following pages. Some variations from this method have been used successfully in favorable years. If the stubble mulch method of seedbed preparation is used it is important that a drill be obtained for most successful planting.

SEEDING NATIVE GRASSES

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The seeding of native grasses, particularly in central and western Oklahoma, is attracting considerable attention among farmers and ranchers. The demand for more information relative to native grass species and methods of seeding is increasing annually. Many farms in Oklahoma have an abandoned acreage which is not now being cultivated because of its low production when planted to cultivated crops. This land is not returning to the owner enough net profit to pay the taxes. Many other acres now being cultivated yield so little that they should be removed from cultivation and returned to pastures. According to the 1940 U. S. census, there are 15,831,216 acres of crop and idle farm land in Oklahoma. The Soil Conservation Service of Region 4 has estimated that approximately 15 percent, or 2,375,000 acres, of this land should be retired to grass. This means that an average of 30,844 acres per county should be planted to pasture.

Several of the better native grass species such as big and little bluestem, side-oat and blue grama, Indian, switch, and others are adapted to this land. With a little help in seedbed preparation, seeding, weed control, and other good management practices, they will make fair pastures within a period of three to five years.

Old Drill Can Be Converted for Grass Seed

The principal problem in establishing native grasses is to get the seed planted. For small areas, the first method described on page 3 (scattering native grass hay) may be used. Where larger areas are to be seeded, a special drill is needed. The seed of most of these grasses is light and fluffy and will not feed freely through regular grain drills. Therefore it is very essential that specialized grass seeders be used to satisfactorily handle this bulky seed.

A special grass drill for planting this seed has been developed at the United States Department of Agriculture's Southern

Great Plains Field Station at Woodward, Oklahoma,* and is now on the market. It is a most excellent machine for drilling native grasses in sorghum stubble mulches and other residues. Many drills of this type are now being used in the western part of Oklahoma. Essential features of the Woodward-type drill are: Use of cotton-planter hopper boxes to carry the seed, double rolling-coulters to open the seed furrow, a depth gauge to accurately control the depth of seeding, and a packer wheel to firm the soil over the seed. Although this drill has proved to be an excellent machine for seeding native grass in stubble, it is difficult to obtain at this time because of the scarcity of materials; and in any case it is somewhat expensive.

To meet the needs of farmers who do not have the capital to buy one of the Woodward-type machines, or cannot obtain one because of material shortages, agronomists at the Oklahoma Agricultural Experiment Station have devised a way to remodel an old grain drill to seed native grasses. To be satisfactory, such a drill must:

1. Feed a native grass seed mixture uniformly.
2. Place the seed at the proper depth in the soil.
3. Be adjustable for varying rates.
4. Compact the soil after the seed is covered.
5. Operate efficiently in mulches.

The remodeled drill meets these requirements satisfactorily. It can be built from an old grain drill which has been discarded or is practically useless for regular crop seeding, and the cost can be kept as low as five to ten dollars, not counting time. Drawings and instructions for remodeling are given on page 10. This drill has been used with good results for two years on the experiment station farms at Stillwater and Lone Grove.

Seeding Grasses in Sorghum Stubble Mulch

Native grass seed will cost 15 to 20 cents per pound and the seeding rate for the recommended mixtures is around 15 pounds per acre. Thus the cost of the seed will be approxi-

* United States Department of Agriculture Circular No. 491, "Grass Culture and Range Improvement in the Central and Southern Great Plains," by D. A. Savage.

mately $2.50 per acre, which makes it important that all grass seed be placed in the soil where they will germinate readily and produce a good stand the first year. Re-seedings are very expensive.

A sorghum stubble mulch crop, such as cane or sudan, grown on the land the previous year, makes an excellent seedbed for grass drilling the following spring if at least one of the cuttings is allowed to remain on the soil. If the sorghum or sudan produces two cuttings, the first crop can be taken off the land for hay and the second crop cut and left on the soil for the mulch. It should be mowed eight to ten inches high to afford the most stubble protection, and should be cut before seed maturity to prevent volunteering.

In central and eastern Oklahoma, where higher annual rainfall occurs and where wind erosion is not a problem, a good stand of grass may be established by drilling seed or scattering mature native grass hay on sudan, sorghum or small grain stubble. The stubble alone may be sufficient protection for the young grass seedlings if the crop has been drilled or broadcast the previous year.

The sorghum crop handled as indicated above does several things toward protecting the young grass seedlings the following year. It provides a weed-free seedbed; it protects the soil surface from blowing during the winter and early spring; it stops water erosion; it furnishes a cover for bare soil, which will increase water absorption and decrease moisture evaporation; it keeps the soil surface loose and friable; it prevents the soil from drying out and baking; and it affords a more natural condition for young, tender grass seedlings.

The grass should be seeded in the stubble mulch the following April. Do not disturb this fine seedbed by additional cultural practices. After the seed germinates, control weed growth by mowing. Ordinarily two mowings during the summer will control weeds the first year.

The young grass seedlings will not show up much nor make a great deal of growth the first year. Do not be discouraged and plow up the planting. It will take the young seedlings two years to establish a good root growth. Some late sum-

mer and fall pasture may be obtained the second year; however, it is advisable not to pasture until the plants are well established and are producing seed.

Sources of Additional Information

A great deal of work has been done at the Southern Great Plains Field Station at Woodward, Oklahoma, on the seeding of native grasses. The Oklahoma Agricultural Experiment Station at Stillwater is conducting grass research. Interesting results are available from the Red Plains Erosion Station, Guthrie, Oklahoma. Additional local information may be had from your County Agricultural Agent, Vocational Agricultural Teacher, or Soil Conservation Service Technician. Individuals interested in the seeding of grasses may well afford to contact these agencies or individuals. A native grass seed list showing sources of seed for the spring season of 1943 is now available from the Department of Agronomy, Oklahoma A. and M. College, Stillwater, Oklahoma.

Converting an Old Grain Drill for Seeding Grass

ATTACHMENTS HELPFUL, BUT NOT ESSENTIAL.

A drill such as described on the following pages can be made either with or without the attachments mentioned below, but a better drill can be made by purchasing the attachments. These attachments are the same as are used on the Woodward drill. They include double disk units complete with 1-inch depth gages, and seed chutes to go with the disk units. The disks replace the regular disks and will do a much better job of opening the furrow and placing the seed at the proper depth. The extra attachments will cost eight to nine dollars per disk unit of the drill. A drill with five disk units will cost about forty-five dollars. This adds to the cost of the drill, but results in a much better job of seeding.

The remodelled drill without the attachments has been used during the past two years on the experiment station farm with good results. When used without the attachments, flexible seed spouts must be provided to carry the seed directly into the furrow behind the drill shoe. These flexible

spouts should be 1 inch to 1¼ inches in diameter. They can be made of conduit, fabric, rubber, or possibly galvanized tin. These spouts should be large enough to permit a free flow of the seed without clogging. It is very important that the seed feed directly into the furrow made by the regular disk, and not be placed over ½ to 1 inch deep in the soil. Also it is important that a set of wheel packers (or press wheels) follow behind the drill to compact the soil over the seed. Ordinary chain drags are not satisfactory. Where the seedbed is not firm the seed should be planted not over ½ inch deep.

METHOD OF CONVERTING DRILL.*

The drill used was an old Superior grain drill made by the Peoria Drill Co., Peoria, Ill. It seems reasonable to believe that any similar type of drill could be reworked in the same way. The changes made are shown in the accompanying drawings.

This drill originally was a 7½-foot surface drill. The wooden seed box was removed from the frame and cut down to a 4½-foot box. The frame was cut to match the box, and only one set of drive gears was left on the frame. The regular length drill with two sets of drive gears probably could have been used.

The bottom of the box was removed and replaced with a heavy galvanized tin bottom with slots cut as shown in Figure 1. An extra shaft made of ½-inch pipe was put through the box for attaching the brush agitators. This shaft was driven by a chain and sprockets attached to the main shaft of the drill.

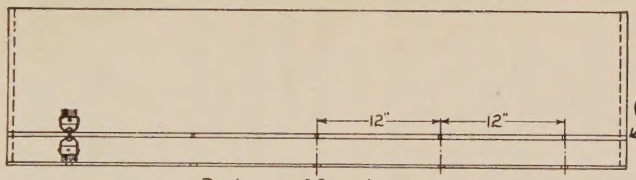
The drive gears remained the same except the right-angled gears were reversed to speed up the picker wheels.

The spouts were replaced 12 inches apart, thus making a five-hole drill.

The brush agitators were made by cutting sections from an old gin brush. The brush is mounted in wood and must

* The drill used on the Experiment Station Agronomy Farm was reworked by Mr. Clifford Elder, farm superintendent.

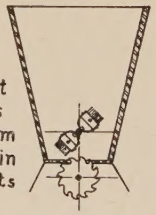
Fig. 1



Back view of Grain box

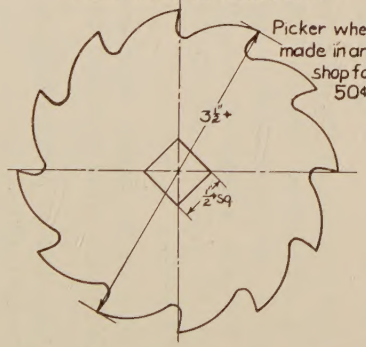
Extra shaft for brushes —Driven from axle by chain and sprockets

Bottom of grain box
Heavy galvanized tin—with slots for picker wheels



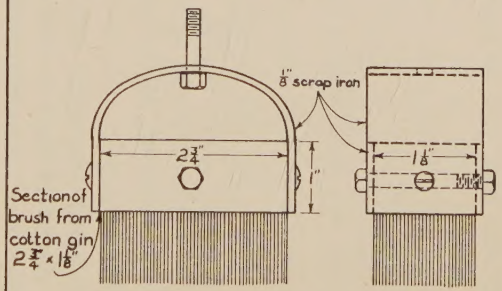
Cross section of grain box
Showing picker wheel and brushes mounted

Fig. 2 Picker Wheel for Grass Drill



Picker wheel can be made in any machine shop for about 50¢ each

Fig. 3



Brush ready for attachment

Endview of brush

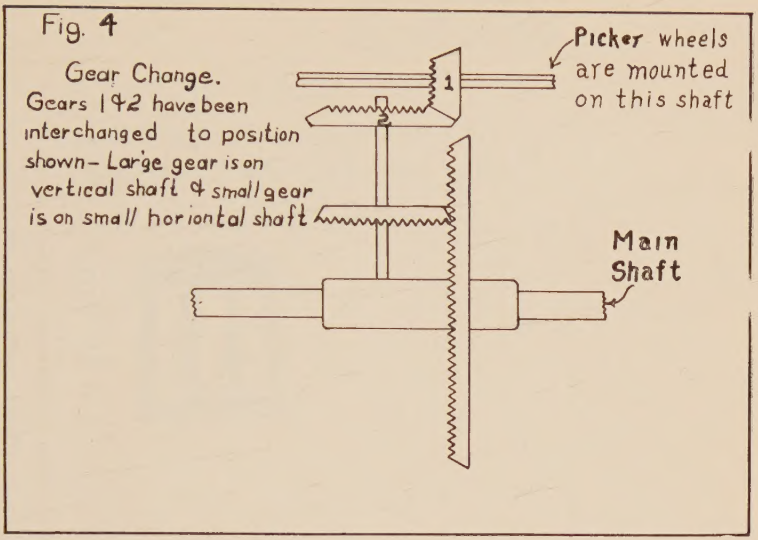


Fig. 4
Gear Change.
Gears 1 & 2 have been interchanged to position shown – Large gear is on vertical shaft & small gear is on small horizontal shaft
1
2
Picker wheels are mounted on this shaft
Main Shaft

be supported by strap iron on all sides as shown in Figure 3. Each agitator consists of two brushes. These two brushes are set at slightly different angles and as the agitator rotates each brush sweeps the seed across the picker wheels in different directions.

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